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ABSTRACT

Open universities are analyzed from the perspective of innovation in higher education in the areas of organization/administration and curriculum/instruction. Examples are drawn from open universities internationally to illustrate what was intended to be innovative, what worked out as innovative, and what turned out unexpectedly to be innovative. Dimensions of openness include: greater access to college, flexible entrance requirements, less constraints of having to be somewhere at a particular time, award of advance credit for university credit work undertaken elsewhere, award of credit toward a degree for nonformal learning, and independent study that is self-paced. Organizational and administrative innovation in the production of home study course packages at the British Open University (UKOU), at Canada's Athabasca University, and at Australia's Deakin University is addressed, along with curricular and instructional innovation, including the use of systematic feedback from students and academic colleagues. An example of an innovation that worked is the course team at UKOU. The use of technology (radio and television) did not greatly change education, although it enhanced the standard print-based home study course. Finally, the potential for further innovation is considered. A bibliography and two tables are appended. (SW)

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International Innovation in Higher Education: The Open Universities

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International Innovation in Higher Education: The Open Universities

> "In a society like ours, academic patterns change more slowly than any others. In my lifetime, in England, they have crystallized rather than loosened. I used to think that it would be about as hard to change, say, the Oxford and Cambridge scholarship examination as to conduct a major revolution. I now believe that I was over-optimistic."
>
> C. P. Snow (1961).

While C. P. Snow may represent the more extreme side of the argument, there is much written in the literature of higher education regarding the imperviousness of higher education to innovation and change. Viewed against this context, it is difficult to take issue with the assertion made by Keegan and Rumble (1982; p.24) that the "open" universities " . . . have been seen as the most striking development in higher education structures in recent decades. . . ." One aspect of this striking development is the sheer number of open universities established throughout the world over the past decade and a half. The listing of institutions given in Table I is intended to be illustrative of the phenomenon.

INSERT TABLE I ABOUT HERE

It is worth emphasizing that the listing is intended to be illustrative only. Depending on one's definition of "open university," there are (arguably) other institutions that could be added to this list. Depending upon one's understanding of what a "university" is, there are (arguably) institutions on this list that ought not to be on the list.

As part of an approach to defining the term "open university," a later section of the paper will describe the nature of the movement toward open universities using a characterization of open learning offered by Wedemeyer (1974). Reference will be made to Wedemeyer's characterization to explain how various of the open universities exhibit an adherence to the spirit of open learning. At the same time, the paper will indicate the different ways in which the open universities have operationalized their respective commitments to open learning. This will lead to "a sort of" a definition of the term "open university," and to a typology of both "open universities" and institutions that are of a similar ilk. There will also be a minor digression to explain why the majority of the open universities are also often characterized as distance education universities.

The major objective of the paper, however, will be to analyze the open universities from the point of view of innovation in international higher education. The paper describes innovations in the open universities under the categories of: (i) organization and administration; and (ii) curriculum and instruction. The paper also discusses innovation in open universities from the point of view of: what was intended to be innovative; what in fact, turned out to be innovative (and, by implication, what didn't work out); and what was unintentionally innovative.

The example of innovations intended but not achieved are related to what are postulated to be defining characteristics of a university - partly to explain why the intended innovations did not take hold, but mostly to argue that these defining characteristics must be taken into account in any innovative endeavor in university level education. The paper concludes with some examples of potential innovations in open universities that could have a significant effect in higher education in the future.

Open Learning

Wedemeyer, one of the early writers and theoreticians in the field of open learning, enunciated the guiding principle that underlies the open university concept:

> "Learning is the act or process of acquiring knowledge or skill. When the adjective "open" is used to qualify "learning" we have put a name to a process of learning that is not enclosed or encumbered by barriers, that is accessible and available, not confined or concealed and that implies a continuum of access and opportunity ....The ideal concept of open education would take the form of education permanente, open to people at all levels, cradle-to-grave."
>
> Wedemeyer (1975; p.125)

In an earlier publication, Wedemeyer (1974; p.12) identified ten characteristics which an ideal open learning system might exhibit:

1. The system is capable of eliciting, interpreting and analyzing learner goals and abilities at the entry point and throughout the students' participation in the instructional and learning program.

2. The system acknowledges that it embodies two separate but related programs: the instructional program embodied in the institutional system, and the learning program carried on by learners with the assistance of the system.

3. The system is capable of enabling learners to participate in the program of learning and instruction without the imposition of traditional academic entry requirements, or the conferring of an academic degree or other certification as the exclusive reward.

4. The system requires that learning objectives be formulated in such a way as to a) be capable of serving as the basis for decisions in instructional design, including evaluation: and b) permit the students to participate in, as well as be informed of, the decision-making processes.

5. As an operating principle, the system is capable, after reaching a critical minimum of aggregation, of accommodating increased numbers of learners without a commensurate increase in the unit cost of the basic learning experiences: i.e., costs must not be directly and rigidly volume sensitive. After reaching the necessary level of aggregation, unit costs should show a diminishing relationship to total system costs.

6. The system makes it operationally possible for the methodologies of instruction and learning to employ sound, video, film, print and other communication-diffusion technologies as vehicles and options for mediating learning experiences.

7. The system uses testing and evaluation principally to diagnose and analyze the accomplishment of specified learning objectives, including the objective of self-directed rather than other-directed learning.

8. The system is able to tolerate distance between the instructional staff with their resources and the learner, employing the distance factor as a positive element in the development of independence in learning.

9. The system accepts the learner and his surroundings as the learning environment and concentrates on enriching that environment instead of developing specialized reaching environments which may induce barriers of place, space, time and other direction into the learning situation.

10. The system seeks, obtains, and maintains the active cooperation of community and regional resources. Such factors can be important to enrich the learning environment, diminish learner dependence on a single resource, and return learning as a natural and continuing activity to the indigenous environment which includes living, working, recreating and learning . . . as an essential step towards the "learning society" (Wedemeyer 1974; p.12).

However, as Wedemeyer (1975; p.126) has pointed out "openness" is not an absolute quantity but rather a range of possibilities. The variety in this range of possibilities is very apparent when one examines the extent to which the open universities vary among themselves. Despite this variation, the open universities all exhibit an adherence to the spirit of open learning - and this is the essence of what makes them "open" universities.

This, of course, is not sufficient to define "open learning," for as Mackenzie, Postgate and Scupham (1975; p.15) have observed:

> "Open learning is an imprecise phrase to which a range of meanings can be, and is, attached. It eludes definition. But as an inscription to be carried in procession on a banner, gathering adherents and enthusiasms, it has great potential. For its very imprecision enables it to accommodate many different ways and aims."

Not surprisingly, then, it has similarly proven very difficult to provide a satisfactory specification for what an open university is (or is not). A university may be "open" in some of its aspects, yet remain traditional in others. Conversely, conventional universities may also be open in ways similar to the open universities while at the same time remaining firmly rooted in their tradition. It would be convenient to be able to refer to a continuum of "openness" with the traditional universities arrayed at one end and the open universities at the other - and the hybrids arranged in between according to those features of "openness" displayed by each. However, for a variety of reasons this does not seem to be a particularly cogent characterization. First of all, there is no particular reason for regarding, say, the elimination of the constraints of time and location of study as any more or any less open than the waiving of a pre-established academic admissions standard. Second, the open universities - and indeed some of the conventional universities - combine open features in a kind of mix and match arrangement. Consequently, the presence or absence of open features is not in general, a sufficient criterion for classifying universities as to degree of openness.

Dimensions of "Openness"

Wedemeyer's ten characterizations have manifested themselves operationally in a wide variety of ways. The spirit of the concept of openness is the idea of extending access to educational opportunity, and there are many ways in which this may be done:

1. The provision of more "places" at the university level.
2. The entrance requirements usually required for admission to university may be softened or even waived altogether.
3. The usual constraints of having to be at a particular place at a particular time may be alleviated or lifted completely.

4. "Substantial" advance credit may be awarded for university level credit study undertaken elsewhere.

5. Some credit may be granted toward a degree for non-formal learning (sometimes referred to as experiential learning).

6. Credits earned through study elsewhere may be "banked" and perhaps combined with non-formal credits or university credits currently being acquired, to be applied toward a degree at the host university.

7. Students may study independently and at a pace of their own choosing.

Daniel (1977) offers a somewhat different, more general characterization of "open" features. He writes of an open university being: open as to people (specifically, he refers to the waiving of academic prerequisites); open as to places (that is, students may be served wherever they may live; and open as to methods (referring to the teaching methods required to support these students studying on their own).

These features may or may not be effected independently. Frequently, though, there is an interactive effect at work. For example, the provision of more places at the university level requires a process which allows for the provision of instruction at diminishing cost at the margin. It is not possible to do this using traditional lecture-based instruction. In fact, at certain points, the cost of lecture instruction will increase significantly in a step-function manner because of the necessity to provide additional physical facilities to accommodate any reasonable increase in numbers of students. Independent study using home study materials is not directly volume sensitive to costs - and, up to some point, becomes more cost effective as student numbers increase. Consequently, in order to increase the numbers of places available to prospective students, universities may adopt the methods of independent study or distance education.

This then permits them to become open in other respects. For example, within fairly broad constraints, students could establish a pace of study appropriate to their individual circumstances.

Distance Education as Open Learning

> "It is curious that distance learning is often viewed as a relatively recent development when, in fact, correspondence courses were in use in this country as long ago as the 1870's; by 1892 the University of Chicago had established a home-study division. The National University Extension Association, including a division of correspondence study, was created in 1915, and the National Home Study Council was founded in 1926. During the next 50 years, some 55 million Americans took correspondence courses, and today approximately three million are studying by mail."
>
> (M. G. Beaudoin, Chronicle of Higher Education, April 24, 1985)

Although distance education, in one form or another, has been a part of higher education for some time, in the past five to ten years it has developed into something of a minor phenomenon. Perhaps the most striking manifestation of this "emergence" of distance education in higher education has been the establishment of significant numbers of institutions around the world that have been charged by mandate with a particular responsibility for distance education.

Why is it that something has been around for as long as distance learning should have (reasonably) suddenly become a focal point for such interest and activity? Beaudoin, in his article in the Chronicle, provides us with some sense of what differentiates "new" distance education from "old" distance education. He states:

> "Most external degree programs developed by colleges and universities in recent years are a far cry from the original correspondence schools. Committed teachers, excellent materials, sophisticated technology, good quality control, substantial student services, and strong organizational support make external programs a desirable means of providing educational opportunity to ambitious adults."

While most people acquainted with the current situation in distance education would agree with his characterization, it is important to note that distance education has also become a vehicle for educational practices that have far-reaching implications.

In its first incarnation as correspondence study, distance education was devised as a means of providing education to students who were geographically isolated and who were unable to attend classes in the conventional manner. Although a somewhat indirectly derived benefit, correspondence study also permitted students the flexibility of studying at a rate and according to a pattern that was more compatible with individual personal circumstances and preferences. In many instances, institutions of higher education chose to build upon these two principles, only, in extending access to higher education. Correspondence education was intended to be as like "in-residence" study as it possibly could be. In these instances, distance education evolved pretty much in one or more of the ways enumerated by Beaudoin - although in any particular circumstance development in one or more of the characterizations offered by Beaudoin could be considered arguable. This is essentially the direction taken by distance education/correspondence study when it has developed within traditional universities - as has largely been the case in Canada, the United States and Australia.

In other instances the removal of the barriers of time and place of study was regarded as just one (albeit conjoint) particular way in which to open access to higher education. In this case, distance education has evolved in accordance with Wedemeyer's characterization of "open learning systems." Within this context - although in ill-defined fashion - distance education has been thought of as a means for a more general opening of

access to higher education. Some of the other ways in which distance education has extended access are: removing admission requirements; awarding advanced credit; removing residency requirements; banking credits earned at different institutions; and granting credit for relevant life experience. The presence of these features in distance education have also lead to distance education's being characterized as a form of "non-traditional" education. In addition, because distance education is largely an independent educational activity, it has been viewed as an opportunity to tailor instruction to individual needs and learning styles, particularly for adult learners.

In all cases, however, there seems to have been a considerable expectation that major pedagogical and administrative advances could be achieved through the application of such new communication technologies as computers (both main frames and micros), satellites, television, videotext, teleconferencing, and so on. These technologies have been viewed primarily as inexpensive means for disseminating instruction.

However, the general point to be made here is that, ". . . openness of access is positively and highly correlated with the extent to which an institution is dedicated to distance - learning" (Neil, 1981; p.37). This is why the open universities that are the focus of this paper are essentially distance teaching institutions. In fact, for some writers in this field, the preferred terminology is "distance teaching universities" as opposed to open universities. The term "open universities" is favored in this paper because it seems to be more in common usage, and because it also frequently appears as a descriptor in the titles of such institutions.

A Typology of the Open Universities

A literal interpretation of the term "open universities" would permit the inclusion of any university seeking through one means or another to

extend its educational services. This is an interpretation advanced, for example, by Mercer (1983; p.7) who states:

> "Each of (the U. S.) land-grant institutions has, in one form or another, developed a system for providing educational services to the citizens of the state without requiring these citizens to travel to the campus of that university. In essence, that is what distance education is: providing educational programs to individuals or groups at locations and times convenient to them. One could venture to say, then, that all of the land-grant universities are distance teaching institutions. Most will not choose to call themselves that simply because what they are doing is such an integral part of their mission."

However, what is unique and innovative about open learning systems is most easily discerned in those universities that embody most of the features of openness enumerated earlier in the paper. As noted previously, it is difficult to identify a set of criteria whereby universities may unequivocally be classified as open or otherwise. This ambiguity, of course, will be reflected in whatever typology one might produce of universities that might qualify as "open." However, attempting a typology is useful in building a consensus whereby some level of agreement may be attained regarding what an open university is.

A variety of typologies are available in the literature - for example, Peters, 1971 (as cited in Rumble and Harry, 1982; p.26); El-Bushra (1973); and Neil (1981). The typology used here is a derivation of one that has been formulated by Keegan and Rumble (1982).

INSERT TABLE II ABOUT HERE

For the purposes of this paper, the institutions of interest will be the autonomous distance teaching universities represented by the two descriptive categories on the left hand side of Table II. These universities have been selected because, as mentioned earlier, as distance

teaching universities (DTU's) they typically embody more open features than do the other universities that might also claim to be open. Moreover, the DTU's were selected because they are fully autonomous in the sense that they have complete control over their curricula and over the awarding of degrees. This means that it is possible to look at innovative practices and their effects in these universities without the kind of confounding that could occur when similar practices are introduced into the context of the conventional university.

Some Notable Exceptions to the Rule

It will be apparent to anyone familiar with non-traditional higher education that so far there has been no mention made of certain organizations that have been formally designed as "open universities"--for example, the University of Mid-America and the Open University of Maryland. This is because these organizations are essentially consortia. The umbrella organization for the consortium may facilitate the development of open study programs, but it enrolls no students and does not award degrees. Decisions about whether or not to use any particular open study program, or to grant credit for it, remain vested in the individual participating institutions. And it is these institutions that enroll the students and award degrees. Consequently, the consortium style "open university" is not a university in the usually accepted sense.

However, the enrolling of students and the granting of degrees is not a sufficient basis for ascertaining whether an institution is or is not a university. For instance, the Open Learning Institute in Canada (see, for example, Ellis and Mugridge, 1983) is empowered to grant degrees. However, the larger part of what this institution does (in a quantitative sense) is technical vocational training and adult basic education at a distance. The

Open Learning Institute has no academic faculty *per se* and no research program - both of these features, it will be argued, are defining characteristics of a "university."

Finally, it must be acknowledged that some of the open universities as characterized here, may be universities more in name than in spirit. In particular, the open universities in developing countries often have stated missions emphasizing manpower training, teacher training, or generally the raising of national levels of education. The mix of programming, the relatively low level of instruction, and the absence of a strong commitment to the generation of new knowledge through research make these institutions more like the colleges found in the developed nations. However, it is not considered necessary to the aims of this paper to develop an argument as to which of these are universities and which are not. The examples used for purposes of illustrating innovation will be drawn from institutions that are widely recognized to be universities.

The Nature of Innovation

Innovation seems to be one of those concepts that obfuscates discussion rather than facilitates it. The usual sense that people have of innovation is "innovation as invention" - that is, they think of products of technology such as microprocessors, satellites, and so on. Others have a sense of innovation that extends to the process of bringing any *new*, problem-solving idea into use. And almost everyone regards improvement of the status quo as a defining characteristic. So, if it isn't new and doesn't make things better, then presumably it isn't an innovation. The difficulty is deciding on what constitutes "new" and what constitutes "better." Rather than expend a large amount of effort in attempting to be definitive with respect to what is an innovation and what is not, perhaps

for present purposes we could just agree to be cheerfully tolerant and accept as innovative any product or way of doing things in higher education that seems to be even slightly different from what one usually finds.

The Nature of a University

There is a formidable body of work on the nature of a university, and it would be a presumptuous folly to attempt to recapitulate it here. However, there is a certain sense of "universitiness" that must be proposed in order to speculate about why some innovations took hold in the open universities and why some innovations did not.

The standard accounting of a university is that it has a teaching role, a research role and a public service role. What differentiates a university from say, a college or a polytechnic is its commitment through research to the discovery of a "new knowledge" and new understandings - and it is upon this new knowledge and these new understandings that the universities' teaching is to be based. The instruments of this pursuit of "truth" are the academic faculty. The quality of a university's endeavors is manifested through the quality of the endeavors of the academic staff. Students become educated in the liberal tradition through an exposure to and involvement in this process. They begin by acquiring a knowledge base, and in the process they simulate the systematic, scholarly inquiry that is the defining essence of a university. Ideally, as time goes by the students become more faculty-like in that they become self-directed and pursue lines of systematic inquiry by themselves.

The fact that practice may belie the principle is not a sufficient basis for denying the principle. The principle must prevail or else there is no unifying concept on which to base an understanding of what a university is. This is not to say that a person would be unable to equal through

some means other than a university education the amount learned or the understanding attained (however measured). It is to say that the standard is established through a university and all it implies - and not the other way around.

Innovation in the Open Universities

The discussion to this point has been intended:

1. To develop a (more or less) common understanding of what will be meant by the term "open university" and to provide some reasonable basis on which to select a special set of open universities as illustrative examples.

2. To develop a sense of what it means to be a university.

3. To develop some sense of what is implied by the term "innovation."

Now it is time to try to pull all of this together, first of all by presenting an argument that the very nature of the open learning enterprise has forced the universities associated with the enterprise to be innovative in ways and to an extent not normally realized in conventional universities. Innovations in the open universities will then be described under the categories of organization and administration, and curriculum and instruction. Examples will be drawn from the open universities, as identified earlier, to illustrate what was intended to be innovative; what in fact turned out to be innovative (and by implication, what did not); and what turned out unexpectedly to be innovative.

Organizational and Administrative Innovation

Peters (1971) has characterized distance education as a form of "industrialized" education - and so it is in the sense that much of the business of distance education is producing a product, namely the home study course package. Production of home study materials requires that various kinds of expertise be brought together and managed so as to yield

the desired result - and there are essentially two phases to this process. The first phase is what has been termed for convenience sake, "creative production." This is a phase in which a course is conceived, designed (which implies producing a course outline, selecting course materials, and specifying the instructional media to be used, if other than print), and written. The second phase is the "physical production" of the course, wherein the results of the creative production phase are turned into the home study, course materials package.

In addition, the establishment and maintenance of an inventory of the course materials, and their distribution is very much an industrial-type of function that requires organizational and administrative considerations not normally found in universities.

At a minimum, the process of course development requires a subject matter expert to generate the content of a course. However, as originally conceived at the British Open University (UKOU) (Perry, 1977), the course team could also have additional subject matter experts; an editor whose expert contribution would be substantive and copy editing; a visual designer whose expert contribution would be to interpret the instruction visually so as to facilitate a student's learning the course material (as well as to look after aspects of the physical production of the course); and an instructional developer who would advise on instructional strategies, assessment, and the sequencing of course material to facilitate learning.

The instructional developers, visual designer, editors and subject matter experts would be drawn into course teams from their respective organizational homes under a matrix style of management. In the case of the UKOU, although it was presided over by a chairman, the course team seemed to exist as a unit in itself, generally accountable within the

university only insofar as it might exceed "reasonable" limits of expenditure and insofar as it might exceed "reasonable" expectations regarding a schedule for the production of the course. In other open universities, the course team was accountable within a separate organizational unit responsible for course production. One variation of this arrangement was to use an Instructional Systems Design (ISD) approach. In this model, the instructional developer was conceived of as the manager of the process that coordinated the various contributions to produce the home study course package. Under this conceptualization the university would have a core of instructional developers and visual designers, and editors. There would be few full-time academic staff, with most of the subject matter contributions coming from academics recruited from outside of the university on term definite, task specific contracts. Tutorial support required during delivery would be arranged for on the same basis. This was the approach initially taken by Athabasca University (Canada), and subsequently modified (Stringer, 1980).

Deakin University in Australia (which teaches both external students and on campus students using their packages of home-study instructional materials) initially used an approach in between the AU and UKOU models (Jevons, 1984). Course development existed as a separate organizational unit headed by a Director - as was the case at AU. However, Deakin is staffed like a conventional university with resident academic faculty with full-time continuing appointments. In addition to their teaching responsibilities to the internal students, these faculty are also required to produce the courses they teach in a form that supports independent distance study. Consequently, virtually all the subject matter expertise that Deakin requires comes from their academic faculty - as compared to the AU

model which would have had most of the academic expertise hired from other institutions on a contract basis.

It is of some significance that both Athabasca University and Deakin University subsequently dissolved their course development units and folded the course production responsibilities into the traditional academic structure of Faculties (with Deans) and Departments. Academic activities are now entirely faculty centered (as opposed to ID centered, as was the case previously). Administrative decisions regarding courses are now totally vested in the particular academic area responsible for the course. Editors and instructional developers working on course development are assigned to a particular program area and are directly responsible to the academic head of the program (usually a Dean).

Curricular and Instructional Innovation

Peters' (1971) point of view regarding distance education an "industrialized" form of education, the Instructional Systems Design philosophy, and the learning objectives movement were all part of the zeitgeist that prevailed during the formative years of the first of the open universities. This lead to an emphasis on certain of the ten characteristics of open learning systems enumerated by Wedemeyer (1974) - namely:

> "The system requires that learning objectives be formulated in such as way as to a) be capable of serving as the basis for decisions in instructional design including evaluation: and b) permit the students to participate in, as well as be informed of the decision-making process."
>
> "The system uses testing and evaluation principally to diagnose and analyze the accomplishment of specified learning objectives, including the objectives of self-directed rather than other-directed learning."

Consequently, early instructional ventures stressed the designing of instruction and the utilization of behaviorally-oriented learning objectives. The Instructional Designer (aka Instructional Developer) was seen

as a major agent in this process. Instruction was viewed as a set of pedagogic principles that could be generally applied independent of subject matter. Knowledge, as embodied in the home-study course, was viewed deterministically and was regarded as an aggregation of specifiable and discrete products. The philosophy of assessment changed in emphasis from the normative style of relative ranking of students on some gestaltic sense of ability and achievement, to a criterion - referenced style wherein testing and evaluation is used (in Wedemeyer's words) ". . . principally to diagnose and analyze the accomplishments of specified learning objectives . . . ."

The perspectives represented by instructional design and criterion - referenced testing have been under discussion and debated virtually from their very emergence (see, for example, Macdonald-Ross; 1976). It seems safe to say that with the passage of time and, in some cases, with shifts toward the traditional organizational structure focussed on the academic functions, the discussion and debate has lessened (Macdonald-Ross; 1973). The structure of university distance education courses seems also to have altered with diminishing emphasis on rigorous instructional design features, especially learning objectives.

However, one of the benefits realized through the cybernetic principle inherent in the instructional systems design philosophy has been the use of systematic feedback from students and from academic colleagues to make the system self-improving. As Daniel and Stroud (1981; p.153) have observed: "The revision and remake of courses is usually in the direction of improved learning effectiveness since data gathered during prior offerings is used in a systematic manner to identify problem areas. In some cases, like that

of the first remake of the Open University's foundation course in mathematics, the gains made have been hailed as a breakthrough in the teaching of the discipline."

In the early stages of most (if not all) of the open universities - and particularly in the earliest of the open universities, for example the UKOU - there was a considerable expectation that the application of technology would play a major role in the new open learning systems. This was undoubtedly partly because such media were viewed as a relatively inexpensive means of distributing instruction to large masses of learners, with no direct relation between costs and additional increases in students. There was also a certain glamor and excitement about using technology for such purposes. Undoubtedly, this appeal was used to sell the idea of an open university (as Harold Wilson did in his election campaign by talking about a new "University of the Air"; Perry, 1971). Corresponding to the expectations for technology was a concerted attempt by many of the open universities to use multi-mediated instruction.

Particular Innovations that "Worked"

It has been observed that one of the abiding contributions of the UKOU to the open university movement was the concept of the course team (Perry, 1971). While the original formulation of the course team has undergone some evolutionary change (Riley, 1981), it remains a primary vehicle for realizing the teaching mission of an open university. The course team has proven to be the nexus of course development and course revision. It has provided a means for coordinating, and managing the various functions required to produce courses - and to improve them through systematic revision.

Although the matter of cost effectiveness could bear some additional study, there is a consensus (Wagner, 1973, 1977; Snowden and Daniel, 1980)

that the costs of offering university level instruction by means of home-study materials diminish (after a critical number of students are enrolled) as student numbers increase. However, as Kaye and Rumble (1981) point out this only applies for programs and courses in which it is possible to achieve large numbers of enrolments. This fact of life will tend to drive the open universities toward such offerings and away from what may well be the more numerous other alternatives. This may lead to an academic imbalance in open university programming (which at some point must raise the issue of whether such imbalanced institutions are truly universities) - or to the movement of the open universities into the more marginal programming which will then lead to a more direct and rigid volume sensitivity.

It was stated earlier that a major expectation of the open universities is that they would substantially increase accessibility to university level instruction for people who would not otherwise have an opportunity to undertake university study. In most of the open universities - and particularly at the UKOU (Glatter and Morgan, 1978) - increasing accessibility was prompted by social policies rooted in a spirit of educational egalitarianism. In this context, accessibility was to have been increased by removing barriers usually confronting such students (by eliminating academic admission requirements and by minimizing the constraints of place and time). In some of the open universities - particularly the Indonesian Open University (I Ketut Nehen; 1985) - improving accessibility was primarily viewed as a matter of increasing the number of places available in the university system.

These innovative aspects of the open universities have clearly been outstandingly successful - as measured by both the explosive growth of open universities and the explosive growth of enrolments associated with them.

Even though the definitions used to generate counts of students and enrolments aren't standardized and the time periods differ, the numbers are so large they defy equivocation. For example, in Perry's (1984) survey, the Sukothai Thammathirat Open University (Thailand), which commenced enrolling students in 1980, reported enrolments of about 110,000 as of July, 1983; the Universidad Nacional De Educacion A Distancia (Spain), which commenced enrolling students in 1973, reported that during the 1981-82 academic year the enrolments totalled around 62,000; the Allama Iqbal Open University (Pakistan), reported 65,000 students for 1982-83. Hawkridge and McCormick (1983), report that enrolments at the Central Radio and Television University (China) have approached a half a million each year from 1979-1981. Often the enrolment demands on various universities were so unexpectedly large that initial enrolment targets had to be revised immediately in order to absorb at least some of the pressure. This occurred at the UKOU, the Open Universiteit (Netherlands), and the STOU (Thailand) among others. It ought to be said, however, that there is a body of opinion (particularly regarding the UKOU) that distance education is not sufficiently serving those who really need educational opportunity - those with a low level of previous education, those from lower socioeconomic groups, and those from groups that have traditionally been regarded as disadvantaged minorities. For example, in the case of the UKOU, Rumble (1982; p.107) states:

> "On the face of it, the Open University has not attracted large numbers of working class or educationally deprived students into its undergraduate programme: its higher degree programme is as 'elitist' as any in Britain."

In actuality, as Glatter and Morgan (1978), and others, have pointed out, many of the students enrolled in open universities are already well

qualified academically - in fact many are sufficiently well qualified to meet the usual entrance requirements of conventional universities. In this case, students seem to be using the open universities to either top up their academic training to the point of receiving a degree, or to obtain knowledge in specialized fields (such as business, computers, etc.).

It is also interesting to note the case of the Universitas Terbuka (Indonesia) which with respect to access, was primarily intended: "To increase the absorption capacity of universities and colleges in Indonesia as a response to the explosive increase of high school graduates who seek tertiary education" (I Ketut Nehen, 1985; p.6). Or phrasing it somewhat differently, "the IOU should be attractive for high school graduates of the current year." However, the experience at both the Universitas Terbuka and the UKOU with students of this kind indicates that open university education is not really well suited to their needs (see, for example, Woodley and McIntosh, 1980). In the case of the IOU, I Ketut Nehen (1985; p.6) estimates that only about 5 percent of the 55,000 people enrolling in the 1984-85 academic year were current high school graduates. Evidence from the UKOU indicates that such students do not adapt well to the rigors of distance study. In addition to the problem of adopting an essentially new learning style, following a program of studies at a distance usually implies a substantially longer period of time than is the case in a conventional university (many open universities set restrictions on the numbers of courses a student may undertake in a term).

Innovations That Didn't Work Out

As indicated earlier, in some minds there was a substantial expectation that a "technology of education" could be introduced through the

universities. The hope was that the technology would result in revolutionary approaches to learning at the university level. This was only obliquely realized - partly because the use of instructional systems introduced elements of quality control through the course team and through a course revision process based on feedback; and partly because the industrialized processes associated with course production resulted in a more cost-efficient method of teaching.

However, there seems little doubt that the "technological revolution" has not lived up to expectations. Not only has it failed to revolutionize learning, it has proven to have severe practical limitations. Bates (1980) in a review of the use of media in distance education found that "television and radio in particular are proving to be of less significance in teaching systems or more difficult to use successfully than was originally expected." A major limitation in the use of television has been its inordinate costliness - an expense which has been subject to a rate of inflation that far exceeds any ability to attract offsetting revenue (either through government grants or through increased tuition revenue). Such costs may be defrayed through the donation of air time in government controlled broadcasting agencies or amortized somewhat if the numbers of students served is sufficiently large. However, there is also a basic paradox in using such media for distance education. Broadcasts are carried at set times. For the very substantial number of students who are truly part-time and who must squeeze their studies into a busy life consisting of work and family responsibilities, this can be a serious problem. A partial solution is to repeat broadcast the programs. However, channel capacity is used up so quickly that for even a small number of courses, repeat broadcasting can be a problem.

Moreover, it has proven next to impossible to use television and radio as effective instructional media. This is partly because such media are extremely well suited to conveying certain kinds of symbolic messages - but are very poor at supporting learning in general. Studies at the UKOU indicated that - in spite of a major investment in instructional television programming, and the consistently relatively high quality of the programs - students were not viewing the programs (Bates; 1975). They were relying primarily on the printed course materials.

Richard Clark, an evaluator of the effects of educational technology, offers the following additional point of view:

> "Five decades of research suggest that there are no learning benefits to be gained from employing different media in instruction, regardless of their obviously attractive features or advertised superiority . . . . The best current evidence is that media are mere vehicles that deliver instruction but do not influence student achievement . . . ."

In summary, it has simply been cheaper and faster to produce courses that are based primarily on written material. It has been the case, almost universally, that technology has found a more appropriate role in enhancing the standard print-based home study course.

An interesting exception is to be found at the Central Radio and Television University (CRTVU) in China, and possibly the University of the Air Japan (UAJ). As Hawkridge and McCormick (1983; p.171) point out:

> "It is understandable that the Chinese television universities had to depend initially on television, compared with other distance-teaching universities elsewhere. Television offers the only means of bringing well-qualified teachers to large numbers of students simultaneously, not in their homes but in the television classes. Print is a supplement to television, the reverse of what happens in the Open University. Nevertheless, at present television is being used to teach in words, not pictures. Almost all the CRTVU programmes consist largely of numbers and Chinese characters written on a blackboard by a teacher who speaks continuously to the board, pointing to various parts of it as he or she speaks, usually off-camera. Occasionally a diagram appears on the screen, a concession to the static iconic (still picture) mode of teaching."

Interestingly, Hawkridge and McCormick also point out that the CRTVU aspires to the range and quality of television programming that exists at the UKOU. They warn that:

> "Thus it is possible that dependence on television may in time erode the success of the television universities. The more the production teams succeed in making "good" educational television, that employs the power of the medium to transmit difficult concepts, the more the students will have to rely upon self-study. With few tutors available, these students may flounder and more of them may fail than at present," (p.172).

In addition, they point out that students will have to respond to the television programming in a very different way. They state:

> "At present, they respond in much the same way as to a conventional lecture, with the amount of note-taking depending much on the correspondence between the television lecture and the accompanying textbook. Note-taking from the average Open University programme is rather difficult, by contrast, as words and numbers seldom appear on the screen and the dynamic iconic (moving picture) mode cannot be readily translated into words. Even the commentary, already in words, may not be suitable to copy down, since it is often more or less meaningless without the pictures," (p.172).

The UAJ seems to be starting where the CRTVU is aspiring to be (Abe; 1985). The UAJ will operate its own television station, so there should be a reasonable amount of broadcasting capacity. The fact that the UAJ owns the station (which is at the UAJ headquarters) gives it the all important control that is essential for such an operation. The UAJ, like the CRTVU, will also send textbooks and other printed materials to the students and will offer lessons at study centres. What the relative emphasis will be on these instructional materials is not apparent at this point. It will be interesting to see whether the UAJ will get caught in the dilemma described by Hawkridge and McCormick.

Some "Unintended" Innovations

Some innovations have occurred in the open universities that were both unintended and unexpected. One of these has been the emergence of word

processing and computer typesetting (see, for example, Cowper and Thompson; 1982). Substantial savings of time and money in course production have been realized through the integrated process made possible by these two technologies. This process has also considerably simplified the coordination of the multiple activities of writing, editing, and laying out printed material. The direction and contributions of graphic artists and visual designers in combination with the printing technology has produced an extremely high quality of course materials.

The visual attractiveness of the course materials coupled with the creative production typically used (with those elements of quality control mentioned previously) have resulted in another unintended innovation. The courses are often so good that they are used by teachers and instructors for teaching purposes at other institutions.

Another major unintended innovation - albeit a less than discrete one - has resulted because with open education there is little or no sense to the usual geographically based jurisdictional boundaries. The melange that is resulting is forcing some very difficult questions. Do we have a free market situation in which universities - potentially funded from the same sources - compete for essentially the same student market? How do we rationalize the expenditure of resources? How do we solve interjurisdictional coordination problems? What is a reasonable basis on which to fund universities not constrained to serve a particular geographic area? One innovative consequence that is partially a response to these issues has been the relatively recent establishment of the Open University Consortium of British Columbia (Canada).

The Potential for Further Innovation

In the longer term, technology may be a source of some innovative development but perhaps in a fashion that may be unexpected. For example,

the most significant benefit from CAI may ultimately be what it tells us about the way people learn.

Because home study materials are often of an outstanding quality, as they increase in quantity and are more readily available, there may be more inclination among conventional universities to use these as course materials for the on-campus students. Such an occurrence would do much to bolster the quality of university education generally. For example, Deakin University (Australia) already provides its internal students with the same set of course materials provided to external students. Whether it is possible to do this sort of thing across universities is difficult to say. Perhaps the combined duress of diminishing funding and increasing enrolments currently facing the universities would be sufficient to bring some movement in this direction.

However, the largest potential seems to reside in an extension of the concept of educational consortia. There will continue to be a demand for better coordination of credits earned at universities in general. There also will be a demand for a ready source of packaged, home study, university courses. Perhaps the ideal consortium would be a regional or national expansion of the credit coordination style of consortium, like the British Columbia one, and a course provider style of consortium, like the International Universities Consortium in Maryland. However, a critical condition for the success of any consortium arrangement must be a formalized and appropriate framework. A consortium established on the basis of special interest only can not be effective. If an appropriate framework can be determined, perhaps the creation of such a hybrid consortium may be a way of establishing the national presence in higher education long sought after in Canada - and perhaps also in the United States.

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TABLE I

THE OPEN UNIVERSITIES

INSTITUTION	DATE ESTABLISHED
University of South Africa (UNISA)	1951*
Open University, United Kingdom (UKOU)	1969
Universidad Nacional de Educacion, Spain (UNED, Spain)	1972**
Free University of Iran, Iran (FUI)	1973
Fernuniversitat, Federal Republic of Germany (FeU)	1974
Everyman's University, Israel (EU)	1974
Allama Iqbal Open University, Pakistan (AIOU)	1974*
Athabasca University, Canada (AU)	1975
Universidad Nacional Abierta, Venezuela (UNA)	1977
Universidad Estatal a Distancia, Costa Rica (UED)	1977
Sukhothai Thammathirat Open University, Thailand (STOU)	1978
Central Radio and Television University (CRTVU) with 28 Provincial Television Universities (PTVU's), China	1978
Open University of Sri Lanka, Sir Lanka (OUSL)	1981
Open Universiteit, Netherlands (OU Neth.)	1981
Andra Pradesh Open University, India (APOU)	1982
University of the Air of Japan, Japan (UAJ)	1983
Universitas Terbuka, Indonesia (UT)	1984
Indira Gandhi National Open University, India (IGNOU)	1986
Open University of Bangladesh	Proposed[1]
Open University of Poland	Proposed[1]
Open University of France	Proposed[1]
Open University of Turkey	Proposed[1]
Open University of Nigeria	Proposed[1]
Palestinian Open University	Proposed[1]

[1]The term "proposed" implies varying degrees of formal and informal, official and unofficial sanctioning. For example, a proposal is currently being constructed regarding the Bangladesh O.U.; the bill initially presented to the legislature for the Nigerian O.U. was rejected in 1981, but is expected to be reintroduced; a feasibility study for the Palestinian Open University was conducted by UNESCO in 1979-80; discussions have occurred regarding open universities in Poland, France and Turkey, but these seem quite tentative and speculative at this time.

*As reconstituted.

**Now defunct.

TABLE II

A TYPOLOGY* OF OPEN UNIVERSITIES

OPEN UNIVERSITIES

Autonomous, centrally controlled distance teaching universities. These teach wholly at a distance and are autonomous. They set their own curricula; examine students and award degrees. Examples of this type are: UKOU (U.K.) EU (Israel) AU (Canada) UNED (Costa Rica)	Autonomous, decentralized distance teaching universities. These teach wholly at a distance. They are similar to the autonomous, centrally controlled DTU's but delivery of instructional programs and the student support systems are handled through associated, decentralized centres. Examples of this type are: UNED (Spain) CRTVU (China)	Essentially autonomous distance universities operating within a federated university structure encompassing both conventional campuses and a distance teaching unit. An example of this type is the Tele-universite in Quebec, Canada.	External studies universities in which the distance teaching function is incorporated in some way with a conventional clearly campus-based teaching function. The kind and degree of their integration may vary from the extensive integration found in so-called "multi-mode" universities like Murdoch and Deakin in Australia - to a more administrative integration such as is more typically found. Examples would be the University of New England (Australia); Massey University (N.Z.); University of Waterloo, Canada

*Derived from Keegan and Rumble (1982).